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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,299	03/25/2004	Satoshi Tanaka	03180.0360	7279

7590 05/18/2007
Finnegan, Henderson, Farabow,
Garrett & Dunner, L.L.P.
1300 I Street, N.W.
Washington, DC 20005-3315

EXAMINER

MEMULA, SURESH

ART UNIT	PAPER NUMBER
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2825

MAIL DATE	DELIVERY MODE
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05/18/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/808,299

Applicant(s)

TANAKA ET AL.

Examiner

Suresh Memula

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This FINAL office action is a response to the amendments and remarks filed on 02/14/2007. Claims 1-7 are pending.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1-3 and 5-7 are rejected under 35 U.S.C. 102(b)** as being anticipated by US Pub. No. 2002/0187406 to Magome et al. (Magome).

3. As to Claim 1,

preparing design data having design patterns corresponding to the patterns to be transferred on a semiconductor substrate (FIG. 2);

generating resized data by enlarging the design patterns of design data by a predetermined resizing quantity (Paragraphs 0002-0003, 0056; FIG. 1, 5-7);

generating first mask data (Abstract; Paragraphs 0022-0023, 0226) by filling a space area between the enlarged design patterns (Paragraphs 0003, 0006, 0056, 0223-0224; FIG. 1, 5-7), the space area having a first space width that is less than or equal to a predetermined space (Paragraphs 0003, 0040, 0056-0057); and

generating second mask data (Abstract; Paragraphs 0022-0023, 0226), to be aligned with the first mask data (Paragraphs 0033, 0036, 0044, 0051, 0059, 0093), having a window portion for selectively exposing an area (Paragraphs 0036, 0157, 0226; FIG. 2-4, 12, 14-15) determined by enlarging the space area between the enlarged design patterns of the resized data (Paragraphs 0003, 0006, 0056, 0223-0224; FIG. 1, 5-7) by the resizing quantity (Paragraphs 0002-0003, 0056).

4. As to Claim 2, wherein the resizing quantity is larger than a half value of a difference between a minimum line width, with which at least one of the patterns can be optically resolved by the projection exposure system, and a line width of the design pattern (Paragraphs 0003, 0040, 0057).

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5. As to Claim 3, wherein the space quantity is larger than a minimum space width with which at least one of the patterns can be optically resolved by the projection exposure system (Paragraphs 0024, 0029, 0040, 0086, 0134).

6. As to Claim 5, estimating a space width reducing quantity for reducing a second space width (Abstract; Paragraphs 0003, 0024, 0029, 0049), the second space width being associated with the pattern to be transferred on the semiconductor substrate (Abstract; Paragraphs 0003, 0024, 0029, 0049), determined by the window portion (Paragraphs 0036, 0157, 0226; FIG. 2-4, 12, 14-15); and enlarging the window portion by the space width reducing quantity (Abstract; Paragraphs 0003, 0024, 0029, 0049).

7. As to Claim 6, further comprising performing process proximity correction on the first mask data and second mask data to prevent process proximity effect (Paragraph 0006) in a process for reducing a second space width of the pattern to be transferred on the semiconductor substrate (Abstract; Paragraphs 0003, 0024, 0029, 0049).

8. As to Claim 7, estimating a space width reducing quantity for reducing a second space width (Abstract; Paragraphs 0003, 0024, 0029, 0049), the second space width being associated with the pattern to be transferred on the semiconductor substrate, determined by the window portion (Abstract; Paragraphs 0003, 0024, 0029, 0049); and preparing the design data based on the first space width and the second space width and a minimum space width with which at least one of the patterns can be optically resolved by the projection exposure system or less (Abstract; Paragraphs 0003, 0024, 0029, 0040, 0057, 0086, 0134; FIG. 2-4, 12, 14-15).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. **Claim 4 is rejected under 35 U.S.C. 103(a)** as being unpatentable over Magome in view of one or more of: US Pub. No. 2003/0154461 to Pierrat (Pierrat), US

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Pub. No. 2004/0058255 to Jessen et al. (Jessen), and/or US Pub. No. 2004/0123266 to Egorov et al. (Egorov).

11. Magome teaches substantially all of the limitations as stated above, except for performing OPC.

12. Pierrat discloses performing OPC (Paragraph 0014), Jessen discloses performing OPC (Paragraph 0003), and Egorov discloses performing OPC (Paragraph 0006).

13. It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have utilized performing OPC; as taught by Pierrat (Paragraph 0014), Jessen (Paragraph 0003), and/or Egorov (Paragraph 0006); in order to compensate for deformations during the lithography process (Pierrat: Paragraph 0014), and/or improve the image transfer process (Jessen: Paragraph 0003), since OPC is typical (Egorov: Paragraph 0006), and known to those skilled in the art (Jessen: Paragraph 0003).

Response to Applicant Remarks

14. The applicant's remarks/arguments are moot in view of the new grounds of rejection.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

16. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suresh Memula whose telephone number is (571) 272-8046. The examiner can normally be reached on M-F 8am-4:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Chiang can be reached on (571) 272-7483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

18. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Suresh Memula
Art Unit 2825
May 13, 2007


JACK CHIANG
SUPERVISORY PATENT EXAMINER